Patent Claims

1. A process for forming UV absorber layers on an inorganic or organic substrate, which comprises
a) allowing a low-temperature plasma, a corona discharge or high-energy radiation to act on the inorganic or organic substrate,
b) applying to the treated inorganic or organic substrate at least one free-radical-forming initiator and at least one UV absorber containing at least one ethylenically unsaturated group, and, optionally in the form of melts, solutions, suspensions or emulsions, at least one synergist and/or at least one ethylenically unsaturated compound,
c) heating the coated substrate and/or irradiating it with electromagnetic waves.

2. A process according to claim 1, wherein the substrate coated is in the form of a powder, a fibre, a felt, a woven fabric, a film or a moulding.

3. A process according to either claim 1 or claim 2, wherein the substrate is a synthetic polymer, a natural polymer, a metal oxide, a glass, a semi-conductor, quartz or a metal, or comprises such a material.

4. A process according to any one of claims 1 to 3, wherein the substrate is or comprises a homopolymer, block polymer, graft polymer and/or copolymer.

5. A process according to any one of the preceding claims, wherein the organic substrate is or comprises a polycarbonate, polyester, halogen-containing polymer, polyacrylate, polyolefin, polyamide, polyurethane, polystyrene and/or polyether.

6. A process according to at least one of the preceding claims, which comprises using as initiator a peroxide, peroxodicarbonate, persulfate, benzpinacol, dibenzyl, disulfide, an azo compound, a redox system, benzoin, benzil ketal, acetophenone, hydroxyalkylphenone, aminoalkylphenone, acylphosphine oxide, acylphosphine sulfide, acyloxyiminoketone, a peroxy compound, a halogenated acetophenone, phenyl glyoxylate, benzophenone, oxime, oxime ester, thioxanthone, ferrocene, titanocene, sulfonium salt, iodonium salt, diazonium salt, onium salt, borate, triazine, bisimidazole, polysilane and/or dye, there being present in

addition, if desired, co-initiators and/or sensitisers.

7. A process according to at least one of the preceding claims, which comprises using as UV absorber a hydroxyphenyl-benzotriazole, hydroxyphenyl-benzophenone, oxalic acid amide, triazine, oxalanilide, cyanoacrylate, salicylic acid and/or hydroxyphenylpyrimidine.

8. A process according to at least one of the preceding claims, wherein the synergist is a sterically hindered amine, an amino ether (>NOR compound), benzoxazine and/or thioether.

9. A process according to at least one of the preceding claims, which comprises using the ethylenically unsaturated compound in the form of a monomer, oligomer and/or polymer.

10. A process according to either claim 9 or claim 10, wherein the ethylenically unsaturated monomers, oligomers and/or polymers are mono-, di-, tri-, tetra- or multi-functional vinyl ethers, acrylates and/or methacrylates.

11. A process according to at least one of the preceding claims, which comprises using as plasma gas an inert gas or a mixture of inert gas and reactive gas.

12. A process according to claim 11, wherein as plasma gas, or as a mixture of inert gas and reactive gas, there is used air, H_2, N_2, He, Ar, Kr, Xe, O_2 and/or H_2O.

13. A process according to at least one of the preceding claims, wherein the liquid used in process step b) contains the initiators in an amount of approximately from 0.01 to 20% by weight, especially approximately from 0.1 to 5% by weight.

14. A process according to at least one of the preceding claims, wherein the liquid used in process step b) contains the UV absorbers in an amount of approximately from 0.1 to 99% by weight, especially approximately from 0.1 to 50% by weight.

15. A process according to at least one of the preceding claims, wherein the liquid used in process step b) contains the ethylenically unsaturated compound in an amount of approximately from 0.1 to 50% by weight, especially approximately from 0.1 to 30% by weight.

16. A process according to at least one of the preceding claims, wherein the liquid used in process step b) comprises additives customary in the coatings industry, especially defoamers, emulsifiers, surfactants, anti-fouling agents and/or wetting agents.

17. A process according to at least one of the preceding claims, which comprises forming the UV absorber layer in a thickness, in the dry state, from a monomolecular layer up to 2 mm, especially in a thickness of approximately from 1 to 1000 µm.

18. A process according to at least one of the preceding claims, wherein in process step c), heating is carried out in an oven, with warm gases, heated rollers, IR radiators and/or with microwaves in order to activate the initiator, a drying step optionally being carried out beforehand.

19. A process according to at least one of the preceding claims, wherein the irradiation in process step c) is carried out using electromagnetic rays of a wavelength of from 200 nm to 20 000 nm or using electron beams, a drying step optionally being carried out beforehand.

20. A process according to at least one of the preceding claims, which comprises carrying out process step c) in an inert gas atmosphere or in air.

21. A substrate having UV absorber layers, obtainable in accordance with a process according to at least one of the preceding claims.

22. A substrate according to claim 21, wherein the UV absorber layer has an optical density of approximately from 0.1 to 6, especially approximately from 0.5 to 4, in the absorption maximum of the UV absorber

23. A substrate according to claim 22, wherein the optical density is approximately from 1 to 3.

24. A substrate according to any one of claims 21 to 23, wherein the proportion of UV absorber in the UV absorber layer is at least approximately 10% by weight, especially at least approximately 15% by weight.

25. A substrate according to claim 24, wherein the proportion of UV absorber is at least approximately 20% by weight.

26. The use of the substrate according to at least one of the preceding claims 21 to 25 as a protecting layer and/or filter, especially for optical purposes.